Title: Use of Phytase in Layer Diets
AECL Project No: UQ-103A
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Summary

Since the commercial expansion of the Australian poultry industry, meat by-product meals have been a significant source of protein and phosphorus. However, this reliance has recently declined as alternate plant protein meals have become available. Nevertheless, animal by-product meals are still an important component of a layer diet, especially as a source of phosphorus.

There is increasing community concern regarding feeding meat by-products to animals, largely due to the occurrence of Bovine Spongiform Encephalopathy (BSE) or Mad Cow Disease in Europe. As a result, the Australian poultry industry is being urged to reduce the reliance on animal by-product meals and consider other cost-effective strategies for supply.

The phosphorus in a typical cereal grain diet is poorly utilised by laying hens. This is not unexpected considering that about two-thirds of the total phosphorus in plant feedstuffs is in the form of phytate. Formations of phytic acid not only reduce the availability of phosphorus, but also reduce the digestibility and availability of amino acids to poultry.

Early studies clearly indicated that the availability of phytate to chickens can be increased considerably by the addition of microbial phytase to diets. However, the high cost of production and the low stability of the enzyme in feed, prevented commercial use of microbial phytase until recently.

In this project, two experiments were conducted to determine the efficacy of microbial phytase in laying hen diets with the objective of adding phytase to the diet, reducing the use of animal by-product meals and determining the impact on performance of egg production and quality.

Results indicated that meat and bone meal did not significantly affect egg production parameters in both old and young layers and this would suggest that it can be removed from layer diets in the future without a production penalty. Phytase slightly increased egg production in both young and old layers and improved egg shell thickness significantly in old layers.

It is concluded that more information that can be generated regarding the available phosphorus requirement of laying hens with and without phytase which will assist in determining the appropriate content of layer diets. In so doing, the cost of diets could be reduced along with a reduction of phosphorus excretion from poultry units into the environment.